CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 98-092

REVISION TO SITE CLEANUP REQUIREMENTS AND
RESCISSION OF ORDERS NOs. 94-012 and 90-042 FOR:

HEWLETT-PACKARD COMPANY
3175 BOWERS AVENUE FACILITY
SANTA CLARA, SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

SITE LOCATION

1. The Site consists of three buildings and associated grounds which comprise a research, development and production facility. It is located at 3175 Bowers Avenue in the City of Santa Clara, near the intersection of Bowers Avenue and Scott Boulevard, not far from U.S. Highway 101. The Site is in an area generally occupied by numerous facilities associated with the electronics industry, and other light industries.

SITE HISTORY

2. The Site was leased to Avantek, Inc. (since about 1972) for the manufacture of small microwave electronics products. Avantek became a wholly-owned subsidiary of Hewlett-Packard in or about 1992. Buildings 86 and 87 (see attached site plan) are owned by the Prudential Insurance Company of America. Building 88 is owned by Kihong and Won Mi Kwon. Building 89, located on the adjacent 3200 Coronado Drive property, was used by Avantek for offices and classrooms between 1985 and 1994, but no manufacturing or fabrication was performed in this building

3. Soil and groundwater contamination by volatile organic compounds (VOCs) had been identified on this Site as early as 1983 in the vicinity of an underground waste solvent tank located in the service area between Buildings 86 and 87. A groundwater extraction system was installed in 1986. Extracted groundwater was used on-site and discharged to the sanitary sewer.

4. In or about 1992, groundwater contamination by VOCs, principally 1,1,1-TCA, was detected north of Building 88. A second, separate extraction system was installed to address this contamination.

DISCHARGERS NAMED

5. Hewlett-Packard Company (hereinafter called Discharger) are the Primary Responsible Parties (PRPs) for Site remediation. The current land owners are not named as Dischargers in this Order. The Board reserves the right to amend the Order at a future date to name these entities as Dischargers, if the PRPs fail to comply with the requirements of this Order.

6. In addition to parties named in this Order, other parties may have contributed to pollution on the properties. If information comes to light showing that any party not currently named as a Discharger caused or permitted any waste to be discharged or deposited on the 3175 Bowers Avenue Site where it entered or could have entered into waters of the State, the Board will consider adding that party's name to this Order.

REGULATORY STATUS

7. This Site is regulated by Site Cleanup Requirements under Board Order No. 90-042 (adopted 03/21/90) and as amended by Order No. 94-012 (adopted 01/18/94).

SITE HYDROGEOLOGY

8. Shallow (A-zone) groundwater is found at a depth of 10 feet or less below the surface, and moves in a north by northwestward direction with a hydraulic gradient of about 0.01 ft/ft.

REMEDIAL INVESTIGATIONS

9. Early investigations (November 1983) detected VOCs in soil and groundwater in the vicinity of an underground waste solvent tank in the interior service area between Buildings 86 and 87. When the tank was removed, groundwater VOC concentrations ranged from 1,000 to 100,000 micrograms per liter (µg/l). VOCs are currently found in groundwater at much lesser concentrations in the A-zone to depths of about 15 to 20 feet, and in the deeper B-zone to depths of about 30 feet. Groundwater extraction began in 1986 in this area. VOCs have also been found in groundwater upgradient of this source area.

10. VOCs have been detected in the groundwater at the adjacent 3200 Coronado Drive property, which is hydraulically cross-gradient of the subject Site. Trichloroethylene (TCE) is consistently detected in the groundwater at 3200 Coronado Drive in low concentrations, but above the maximum contaminant level (MCL) of 5 µg/l. The source of this contamination has not been determined.

11. Groundwater contamination has been suspected at the adjacent Coronado Plaza property to the east of the subject Site, but investigations on this property have not located any source(s).

12. Groundwater contamination has also been detected at the adjacent property located at 3050 Bowers Avenue. This property, operated by Applied Materials, is hydraulically upgradient of the subject Site. Applied Materials currently extracts and treats groundwater pursuant to Board Orders 90-056 and 90-134. Prior to implementation of extraction pumping at the 3050 Bowers site, pollutants probably migrated beneath Bowers Avenue onto the subject Site. However, the most recent groundwater monitoring at wells along the property boundary indicate only minor concentrations of TCA, 1,1-DCA, and 1,1-DCE.

REMEDIAL MEASURES

13. Source excavation and groundwater extraction has been effective in remediating groundwater contamination in the source area (between Buildings 1 and 2). Groundwater VOC concentrations typically exceeded 1,000 µg/l in this area when the extraction pumps were activated in 1986. Since then, VOC concentrations have declined dramatically. For example, TCE concentrations in monitoring well AV-4A averaged 882 µg/l during the ten monitoring events between 1983 and 1987. In contrast, TCE concentrations in this same monitoring well averaged 17 µg/l over the 10 most recent monitoring events. While pumping and treating would likely continue to remove VOCs from the groundwater, the cost-effectiveness has declined considerably.

14. The Board has agreed to allow the Discharger to discontinue pumping and treating groundwater at this Site, and to implement a "natural attenuation", or "intrinsic remediation", methodology, based on procedures/protocols provided by the U.S. EPA. In the event that degradation of VOCs are slower than expected in the B-zone, enhanced bioremediation using oxygen-releasing compounds (ORC) is proposed in order to expedite VOC degradation.

15. Groundwater monitoring will continue in order to follow the progress of Site remediation. Groundwater samples will be analyzed for VOC constituents as well as degradation parameters to gauge the progress of intrinsic remediation.

16. The proposed methods for remediating residual VOCs at this Site are expected to achieve compliance with Basin Plan objectives.

BASIN PLAN

17. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20, 1995, and November 13, 1995, respectively. A summary of regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

18. The potential beneficial uses of the groundwater underlying and adjacent to the property include:

    a. Industrial process water supply
    b. Industrial service supply
    c. Municipal and domestic supply
    d. Agricultural supply

    In this general area the deeper regional aquifer below a depth of about 200 feet is a major water-supply source.

OTHER BOARD POLICIES

19. Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from Site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.

20. Board Resolution No. 89-39, "Sources of Drinking Water", defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels.

STATE WATER BOARD POLICIES

21. State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", applies to a discharge of treated extracted groundwater, should this prove to be necessary at the subject Site, and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives.

22. State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup of Discharges Under Water Code Section 13304", applies to any potential discharge at this Site. This Order and its requirements are consistent with provisions of Resolution 92-49, as amended.

PRELIMINARY CLEANUP GOALS

23. Pending the establishment of Site-specific cleanup standards, the following preliminary cleanup goals should be used for these purposes:

    a. Groundwater: The cleanup goal is a return to background quality if feasible; otherwise, applicable water quality objectives (e.g. maximum contaminant levels, or MCLs) or, in the absence of a chemical-specific objective, risk-based levels (e.g. drinking water equivalent levels).

    b. Soil: The cleanup goal is to be no more than one part per million (1 ppm, or 1 mg/Kg) total VOCs, or goals for identified contaminants to be based upon acceptable Preliminary Remediation Goals proposed by the Discharger. Soil cleanup goals have been reached at this site.

BASIS FOR 13304 ORDER

24. The Discharger has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.

COST RECOVERY

25. Pursuant to California Water Code Section 13304, the Discharger is hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order.

CEQA

26. This action is an Order to enforce the laws and regulations administered by the Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.

NOTIFICATION

27. The Board has notified the Discharger and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

PUBLIC HEARING

28. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the Discharger (or its agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. PROVISIONS

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in California Water Code Section 13050(m).

2. **Good Operation and Maintenance (O&M):** Existing extraction wells and pumps, although dormant, are to be maintained in operable condition and shall be re-activated if off-site migration occurs, or if instructed to do so in writing by the Executive Officer. Any facility or control system installed to achieve compliance with the requirements of this Order shall be maintained in good working order.

3. **Cost Recovery:** The Discharger shall be liable, pursuant to California Water Code Section 13304, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the Site addressed by this Order is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any dispute raised by the Discharger over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.

4. **Access to Site and Records:** In accordance with California Water Code Section 13267(c), the Discharger shall permit the Board or its authorized representatives:

   a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

   b. Access to copy any records required to be kept under the terms and conditions of this Order.

   c. Inspection of any monitoring or remediation facilities installed in response to this Order.

   d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the Discharger.

5. **Self-Monitoring Program:** The Discharger shall comply with the Self-Monitoring Program as attached to this Order and as may be amended by the Executive Officer.

6. **Contractor/Consultant Qualifications:** All technical documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.

7. **Lab Qualifications:** All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control (QA/QC) records for Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g. temperature).

8. **Reporting of Changed Owner or Operator:** The Discharger shall file a technical report on any changes in Site occupancy or ownership associated with the property and facility described in this Order.

9. **Document Distribution:** Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the following agencies:

a. City of Santa Clara
b. County of Santa Clara, Health Department
c. Santa Clara Valley Water District

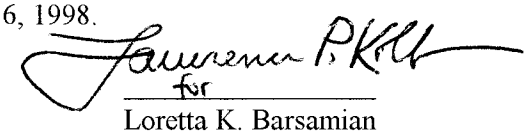
The Executive Officer shall receive one complete copy of all correspondence, reports, and documents pertaining to compliance with this Order, and may modify this distribution list as needed.

10. **Reporting of Hazardous Substance Release:** If any hazardous substance is discharged in or on any waters of the State, or discharged and deposited where it is, or probably will be discharged in or on any waters of the State, the Discharger shall report such discharge to the Regional Board by calling (510) 286-1255 during regular office hours (Monday through Friday, 8:00 to 5:00). A written report shall be filed with the Board within five (5) working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified. This reporting is in addition to reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.

11. **Rescission of Existing Order:** This Order supersedes and rescinds Order No. 90-042 and as amended by Order No. 94-012.

12. **Periodic SCR Review:** The Board will review this Order periodically and may revise it when necessary. The Discharger may request revisions and upon review the Executive Officer may recommend that the Board revise these requirements.

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 16, 1998.



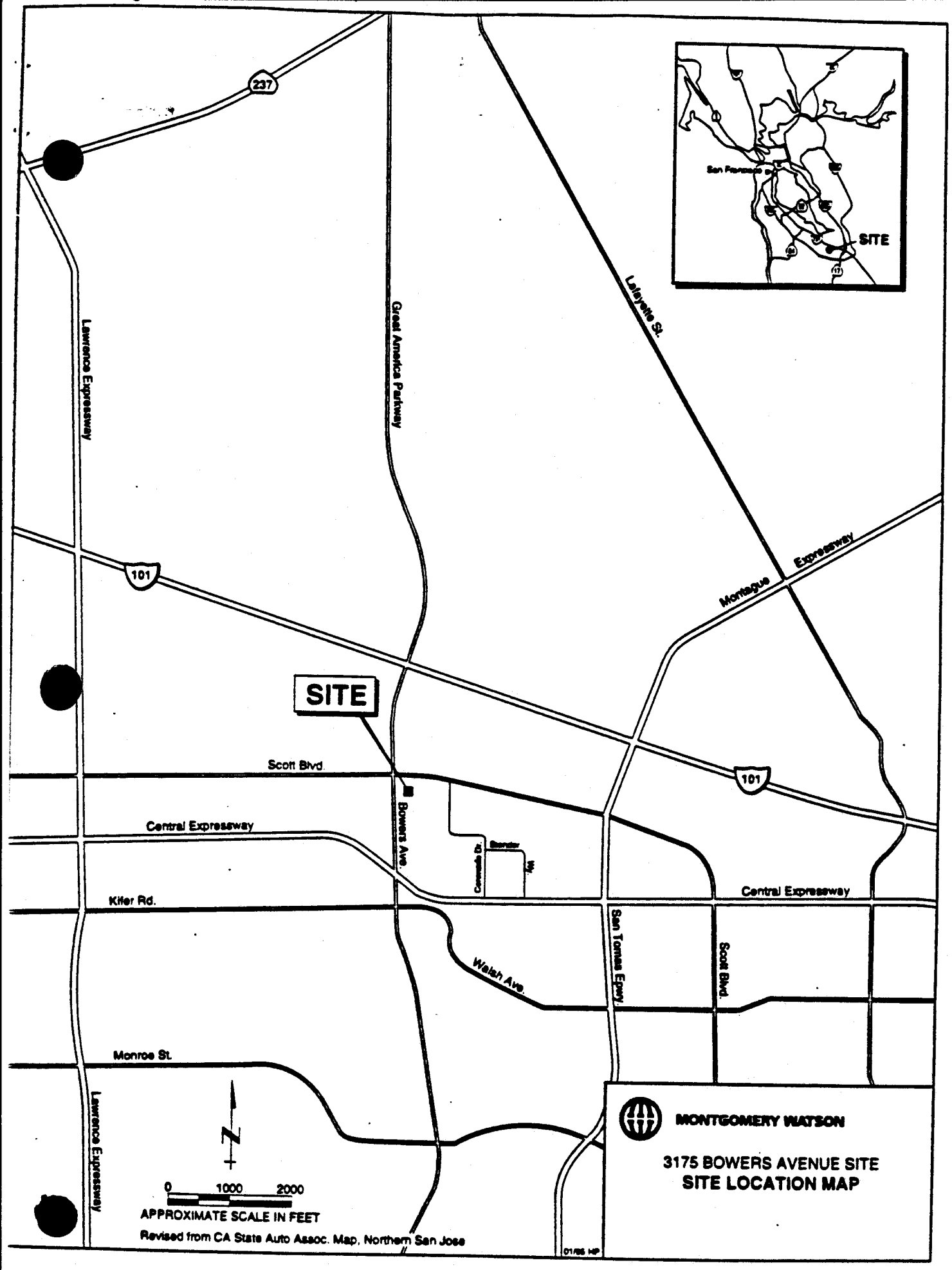
for

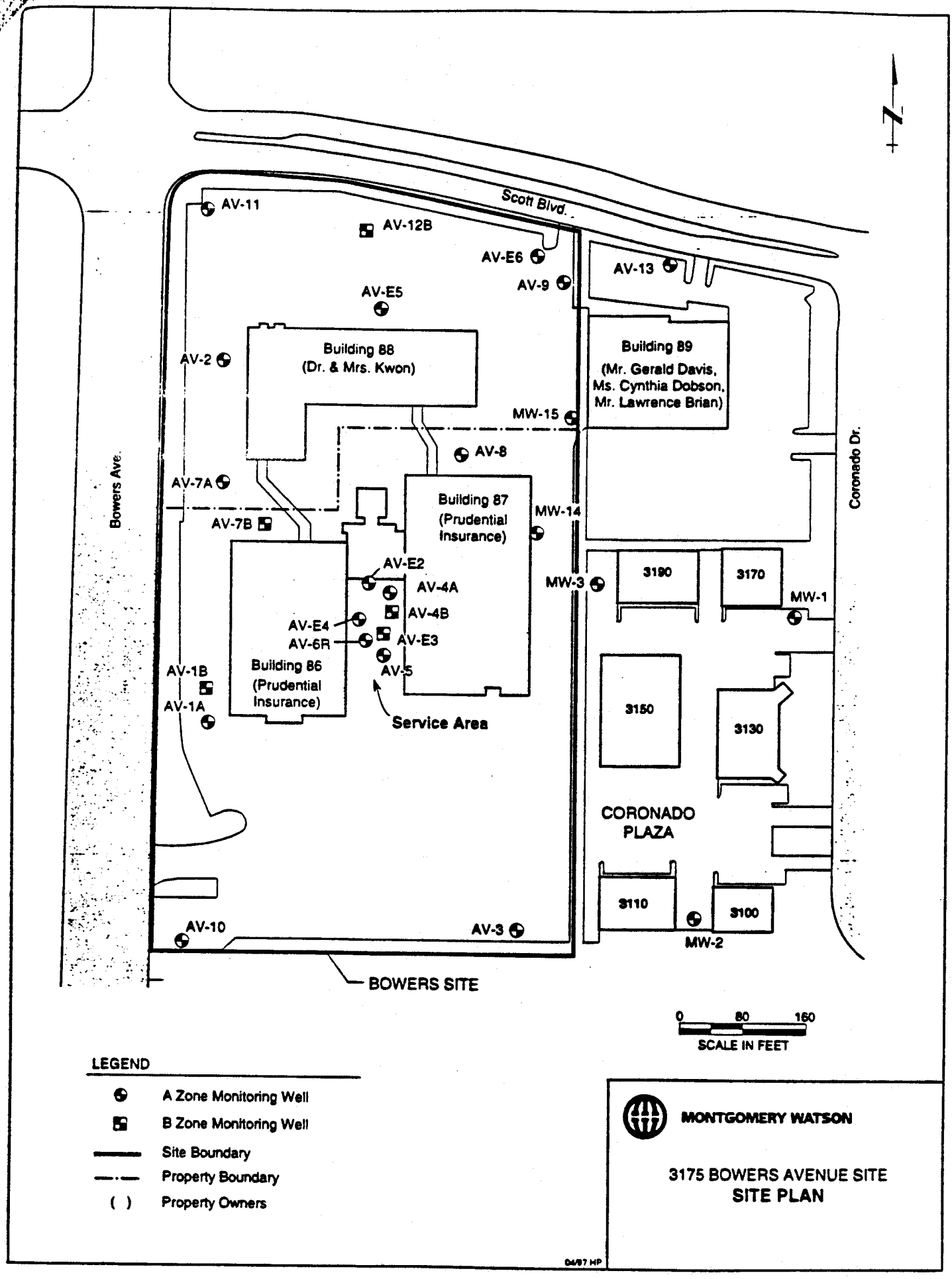
Loretta K. Barsamian
Executive Officer

FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTION 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY.

Attachments:

Site Location Map
Site Plan
Self-Monitoring Program


237
101
Lawrence Expressway
Great America Parkway
Lafayette St.
Montague Expressway
SITE
Scott Blvd.
Central Expressway
Bowers Ave.
Kifer Rd.
Walsh Ave.
San Tomas Expwy.
Monroe St.
Lawrence Expressway
SITE
0 1000 2000
APPROXIMATE SCALE IN FEET
Revised from CA State Auto Assoc. Map, Northern San Jose
01/98 HP
MONTGOMERY WATSON
3175 BOWERS AVENUE SITE
SITE LOCATION MAP



LEGEND

- A Zone Monitoring Well
- B Zone Monitoring Well
- Site Boundary
- Property Boundary
- ( ) Property Owners

MONTGOMERY WATSON

3175 BOWERS AVENUE SITE
SITE PLAN

04/97 HP

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR:

HEWLETT-PACKARD COMPANY AND AVANTEK, INC.
3175 BOWERS AVENUE, SANTA CLARA
SANTA CLARA COUNTY

1. **Authority and purpose:** The Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code Sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Board Order No. (site cleanup requirements).

2. **Monitoring:** The Dischargers shall measure groundwater elevations and collect and analyze representative groundwater samples on an annual basis. Groundwater elevations shall be measured in all on-site monitoring wells. Analysis of groundwater for VOCs (EPA Method 8260) shall be performed in the following A-zone and B-zone monitoring wells:

A - Zone	B - Zone
AV-3	AV-4B*
AV-E2	AV-7B
AV-E4*	AV-12B
AV-E5	
AV-E6	
AV-11*	
AV-13	
MW-14	

* - These wells shall also be monitored for the following degradation parameters: Nitrate nitrogen (EPA Method 353.2), Chloride (EPA Method 300.0), Methane, ethane and ethene (Modified SW-846, Method 3810), Ammonia nitrogen (EPA Method 350.3), and Orthophosphate (EPA Method 365.2).

3. **Annual Monitoring Reports:** The Discharger shall submit an annual monitoring report to the Board by June 1 of each year, starting with June 1, 1999. Each monitoring report shall include the following information.

   a. Transmittal Letter: The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall be signed by the Discharger's principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

   b. Groundwater Elevations: Groundwater elevation data shall be presented in tabular form, and a groundwater elevation map should be prepared for each monitored water-bearing zone. Historical groundwater elevations shall be included in each annual report.

c. Groundwater Analyses: Groundwater sampling data shall be presented in tabular form, and an isoconcentration map should be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. Supporting data, such as lab data sheets, need not be included.

d. Groundwater Extraction: If applicable, the report shall include groundwater extraction results in tabular form, for each extraction well and for the site as a whole, expressed in gallons per minute and total groundwater volume for the year. The report shall also include contaminant removal results, from groundwater extraction wells and from other remediation systems (e.g. soil vapor extraction).

e. Status Report: Relevant work completed during the reporting period (e.g. site investigation, interim remedial measures) and work planned for the following year.

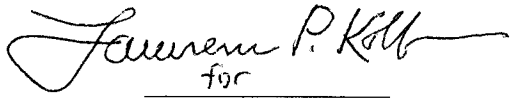
4. **Violation Reports:** If the Discharger violates requirements in Site Cleanup Requirements, then the Discharger shall notify the Board office by telephone as soon as practicable once the Discharger has knowledge of the violation. Board staff may, depending on violation severity, require the Discharger to submit a separate technical report on the violation within five working days of telephone notification.

5. **Other Reports:** The Discharger shall notify the Board in writing prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.

6. **Record Keeping:** The Discharger or his/her agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and shall make them available to the Board upon request.

7. **SMP Revisions:** Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the Discharger. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

I, Loretta K. Barsamian, Executive Officer, hereby certify that this Self-Monitoring Program was adopted by the Board on September 16, 1998.



for

Loretta K. Barsamian
Executive Officer